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Simulating the Effects of Drinking Water Diversion Dam on Groundwater Levels

Products

A technical report and technical note on the simulation of the localized effects of the diversion dam on the groundwater in the bosque.

Benefits

An understanding of how the local groundwater levels will change is the first step in understanding how the bosque vegetation will change in the vicinity of the dam. The information produced will be used by habitat models to understand how the change in the water levels in the river will affect the habitat of protected and desired species.

Issue

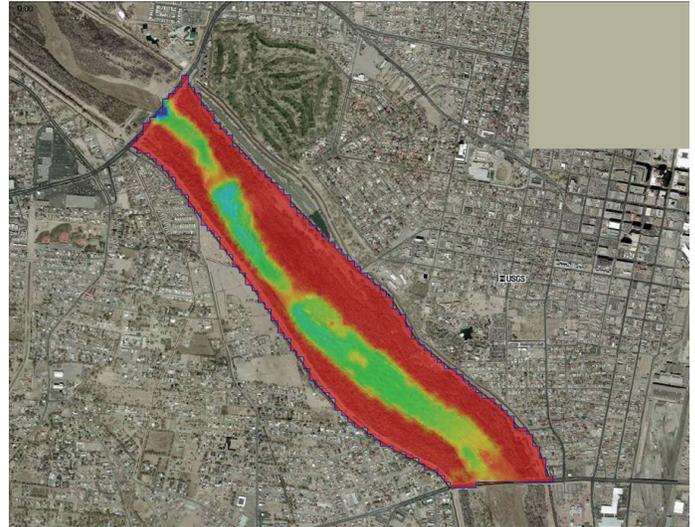
The city of Albuquerque has built a new drinking water diversion dam and facilities to provide water to the city. The water will be extracted from the Rio Grande and will be returned at a location downstream. The floodplain of the river is termed the bosque and is used as habitat by native species that depend on the river as their water source. The bosque is also a scenic area and considered a jewel of the city. The bosque is actively managed to promote the growth of native, desirable species that promote the natural, low water consumption habitat. The introduction of the drinking water diversion dam will help sustain the water needs of the city but will alter the flow of water through a portion of the bosque. This research will look into how that water flow will be altered.

Description

The effort will use several different models to understand the change in water surface elevation due to the diversion dam and the interaction between the surface water and groundwater locally to the dam and affected areas. An existing HEC-RAS model will be used to determine the change in river depth based on extracted flows. The data from HEC-RAS will then be sent to the FEMWATER groundwater model to demonstrate the effect of the change in river head on various steady-state groundwater conditions. The FEMWATER model will show a cross-sectional view of the change in groundwater head. A steady-state GSSHA application will also be created to show relative changes over the 2-D domain.

Sponsor

Southwest Urban Flood Damage Program (SWDP). Some funding also came from the System-Wide Water Resources Program (SWWRP).



Water depth in river and overbank area of bosque as modeled by GSSHA. Blue is deepest and red is dry

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